

Coal Mining Risk Assessment – Proposed Residential Development**Sources of information:**

Coal Authority Mining Report Ref 51001173054001

Wardell Armstrong LLP archive records

Published British Geological Survey geological mapping – Sheet 77 Huddersfield

Coal Authority Datasets available under the Open Government Licence v3.0.

Issue	Hazard	Site Affected (Yes/No) (Detail – where appropriate)	Consequences (where appropriate)	Recommended Mitigation Measures (where appropriate)
1. Are there any recorded coal mine entries within the site or within 20m of the site boundary?	<ul style="list-style-type: none"> Catastrophic collapse of mine entry leading to ground instability or voids at the ground surface. Settlement of the ground surface above/adjacent to the mine entry. Generation of crown holes at the ground surface. Mines gas emissions 	No: There are no recorded mine entries within or within 20m of the site.	N/A	N/A
2. Is the proposed development in the likely zone of influence of past deep underground mining?	<ul style="list-style-type: none"> Ground subsidence. Ground instability. 	Yes: The site is in the likely zone of influence from past deep (30m+) underground mining in 1 seam of coal, last worked in 1911.	Ground subsidence associated with recorded deep underground coal mining can give rise to levels of damage to the built environment that may affect both serviceability and design life of a structure.	Ordinarily, ground movements arising from the reported past deep underground mining activities would be expected to have ceased by the early 1920s. Accordingly, past deep mining activities do not represent a risk to the development area; as such no mitigation measures are required.
3. Is the proposed development in the likely zone of influence of any present underground mine workings?	<ul style="list-style-type: none"> Ground subsidence. Ground instability, loss of ground, generation of crown holes. 	<p>Active Mining: There are no active underground mines in the locality.</p> <p>Future Mining: Reserves are available, but are unlikely to be worked in the foreseeable future.</p>	N/A	N/A

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4. Is the proposed development within the likely zone of influence of recorded underground workings at shallow depth (depths of less than 30m)?	<ul style="list-style-type: none"> Ground subsidence. Ground instability, loss of ground, generation of crown holes. 	No: There are no recorded shallow mine workings within influencing distance of the site.	N/A	N/A
5. Is there a possibility of unrecorded shallow mine workings and/or mine entries?	<ul style="list-style-type: none"> Ground subsidence. Ground instability, loss of ground, generation of crown holes. Catastrophic collapse of mine entry leading to ground instability or voids at the ground surface. Settlement of the ground surface above/adjacent to the mine entry. Mine gas emissions 	<p>Yes: The Coal Authority believe that there is coal at or close to the surface which may have been worked some time in the past.</p> <p>Inspection of BGS geological mapping conjectures that the '36 Yard Coal' seam outcrops some 14m to the southeast of the site dipping away from the site at an approximate inclination of 5°.</p> <p>The outcrop position of this coal seam has not been proven and it may be present within the site or within influencing distance of the site boundary. Accordingly, the possible presence of unrecorded shallow mine workings beneath the site cannot be discounted.</p> <p>In addition, unrecorded mine entries may exist on or within influencing distance of the development area.</p>	Ground subsidence associated with past shallow underground mining and mine entries can result in severe localised ground instability and damage to the built environment, harm to human health, injury or death of construction workers using the site.	<p>Shallow Mine Workings: Based upon the available CA data, unstable mine workings may possibly be present at shallow/influencing depth beneath the site. The published geological mapping indicates that the 36 Yard coal seam outcrops in close proximity to the site boundary. However, the published mapping does not refer to the proven position of the coal seam and it would be prudent to assume that it may outcrop within the site boundary. Therefore, the possibility of unrecorded mine workings being present at shallow depth beneath the site should not be discounted.</p> <p>An intrusive investigation would be appropriate in order to confirm the shallow geological structure and presence of any coal at shallow depth beneath the site. Thereafter, stabilisation as necessary, is recommended to facilitate secure development. This could be achieved by the drilling of a number of boreholes located towards the southeast of the site (within the area potentially underlain by unrecorded shallow workings). If shallow workings are confirmed then a programme of stabilisation works would need to be undertaken. Mitigation by excavation is not generally considered appropriate in view of the size and location of the site within an urban area. However, if coal is identified at very shallow depth for a limited footprint within the site, consideration could be given to the excavation and removal of the coal horizon, as an alternative to stabilisation by drilling and pressure grouting.</p>

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				Mine Entries: The potential exists for unrecorded mine entries to be located beneath the site, and construction work should proceed cautiously, recognizing that unstable entries could be present. Should any anomalous ground conditions be encountered during the course of the development works then specialist advice should be sought regarding further investigation and remedial works.
6. Is there a record of mine gas emissions within the site boundary?	<ul style="list-style-type: none"> Mixtures of noxious of explosive gases reaching the ground surface via superficial deposits, faulted/broken strata or poorly filled mine entries and entering structures, confined spaces etc, when an explosive or asphyxiating hazard may be generated. 	No: The Coal Authority has no record of any gas emissions requiring action within the site.	N/A	N/A
7. Is the proposed development in an area for which the Coal Authority is determining or has granted a licence to remove coal by underground methods?	<ul style="list-style-type: none"> Ground subsidence. Ground instability. 	No	N/A	N/A
8. Are there known faults or other lines of weakness (eg. fissures) due to mining at the site?	<ul style="list-style-type: none"> Ground subsidence. Mixtures of noxious of explosive gases reaching the ground surface via faulted/broken strata and entering buildings, structures, confined spaces 	No: The Coal Authority has no record of lines of weakness at the site.	N/A	N/A

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	etc, when an explosive or asphyxiating hazard may be generated. <ul style="list-style-type: none"> Stepped rockhead profiles where there has been subsidence across faults, impacting settlement. Of proposed structures. 			
9. Has the site been subject to remedial works by, or on behalf of, the Coal Authority under its surface hazard call out procedures?	<ul style="list-style-type: none"> Indication of past and potential future subsidence issues on site. 	No.	N/A	N/A
10. Is the proposed development within the boundary of a surface mining/opencast site from which minerals have been removed by surface mining/opencast methods?	<ul style="list-style-type: none"> Potential of a ground gas source and/or migration pathway. Potential settlement problems. 	No.	N/A	N/A
11. Is the proposed development within 200m of a surface mining/opencast site from which minerals are being removed?	<ul style="list-style-type: none"> Development constraints associated with environment/noise/dust 	No.	N/A	N/A

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Assessment of Cumulative Impact of Mining Issues:

This risk assessment has identified the principal risks to the proposed development to be the potential presence of unrecorded shallow mine workings, within the 36 Yard coal seam, and the potential presence of unrecorded mine entries.

Accordingly, a potential unstable shallow mining setting has been identified at the site. The proposed development is regarded to be sensitive to differential settlements and residual risks presented by shallow mine workings and crown-hole type collapses impacting upon both public safety and the structural longevity of development. In the circumstances it is appropriate to undertake targeted investigation to confirm whether there is a shallow mining setting at the site and to undertake stabilisation of any remnant voiding at the mine horizon.

Furthermore, construction should proceed with caution in consideration of the potential for the 36 Yard coal seam to be present at very shallow depth within the site. Care should be taken to prevent any coal being exposed to air for an extended period of time due to the possibility of spontaneous combustion. Further guidance should be sought in the event of encountering coal at shallow depth (within the foundation excavations) or possible evidence of an unrecorded mine entry is identified.

Prior to carrying out any works which may intersect, disturb or enter any coal seams, coal mine workings or mine entries (within the ownership of the Coal Authority), the written permission of the Coal Authority shall be obtained (www.coal.gov.uk/services/permissions/index.cfm).

N/A = Not Applicable

Prepared by



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